

that we must look for the latter in some morbid condition other than what is observed in the solid organs. It is to be hoped that the investigations now going on in reference to the alterations of the blood may throw some light upon this obscure subject.

Of the causes of death but little need be said. In some cases the condition of the organs afforded a sufficient explanation of it, especially in those two, where, in addition to the lesions generally met with, there was either extensive ulceration of the large intestine, or thinning and softening of the mucous membrane of the small intestine with partial peritonitis. In others again, the lesions of the solid viscera do not appear to be sufficient, but, as the blood was altered in every case in which its condition was noted, we may reasonably conclude that the changes in this fluid played an important part in bringing about the fatal termination.

The symptoms, &c., will form the subject of a future communication.

ART. II. *Statistics of Fractures and Dislocations Treated in the Pennsylvania Hospital, during the ten years, from 1830 to 1839 inclusive.*

By GEORGE W. NORRIS, M. D., one of the Surgeons to the Institution.

IN the whole range of surgical subjects, there are none of greater practical importance than those of fractures and luxations; none that require more constant care and attention for their proper treatment, and none consequently that should more frequently be urged upon the notice of the practitioner and student. During the ten years which have just elapsed, a large number of these accidents have been treated at the Pennsylvania Hospital, and without having any novelties regarding their treatment to make known, we have thought that it might not be uninteresting to the readers of the reports from this hospital to have presented to them the results obtained there during a term of years, in these important classes of injuries. As has ever been the case, surgeons are still divided in opinion as to the best method of treating fractures of the extremities. Volume after volume has been written to show the propriety of one or another mode of treatment, but in few instances only has an appeal to a large number of facts been made to justify the recommendations that have been given of them. To public institutions it is that we must principally look for statistical information in regard to these injuries, and, although our records on this subject are so imperfect as to permit us to give only general results, still we look upon them as of some interest, and have prefaced them with a concise account of the plan of treatment which has been generally adopted in these accidents, during the time mentioned.

Femur.—In the treatment of most fractures of the thigh, the straight position is preferred, and the apparatus of Desault modified, is that mostly employed. The improvement consists in the greater length of the outer splint, and the attachment to its lower end of a small block, over a notch in which the extending band passes, in order that the extension be made in a line with the axis of the limb. If the limb can be at once brought down to its natural length, it in all cases should be done on the first application of the apparatus; but when there is so much muscular contraction as to render this very painful, the limb need not be drawn to its full length at first. In these cases it should be extended as much as possible, and, at the second visit of the surgeon, should be seized at the ankle, and slowly pulled downwards, while an assistant tightens and makes fast the extending band. This course is to be repeated until the fragments are perfectly reduced, which may in most cases be readily done at the end of twelve or eighteen hours. No great advantage is believed to be gained by the employment of short splints, or bandages of any sort, applied immediately to the thigh, and their use is dispensed with, as they prevent the surgeon from accurately examining the state of the fracture, and require that the limb should be disturbed in order to re-apply them. A long narrow bag, stuffed pretty firmly with cotton, and covered with buckskin, is used for the counter-extending band; and a double buckskin gaiter, with a thin layer of carded cotton laid over it, or a buckskin band lined with linen, is made use of for the extension. Extension violent enough to cause pain should never be made use of; it ought always to be moderate, steady, and permanent. If constant pain is complained of at any point on which the dressings press, it should be immediately examined and re-adjusted. The restlessness of patients causes any apparatus to be easily displaced, and it is therefore necessary to smooth, tighten, and carefully re-examine it daily. Excoriation of the heel is most frequently produced by want of care in not having the extending band smoothly applied to the part, or by tightening it in too great a degree without having previously drawn down the limb with the hand. Sometimes, however, excoriation is caused by the weight of the foot alone; and in these cases the application of a piece of kid, spread with soap cerate, will mostly prevent it.

In fractures of the femur within the capsular ligament, the application of any splints in the treatment is discarded—the limbs being merely supported by pillows in the extended position. No case has been observed in the period comprised in this report, in which the toes were thrown inwards. Several instances of fractures about the hip joint, in persons of middle age, have come under notice, in which, even with the most accurate examination and measurement, it was impossible to detect any crepitus or shortening of the limb till after the lapse of one or more days.

Leg.—In the treatment of fractures of the leg, as in those of the thigh, splints or bandages are rarely applied to the limb. The leg is placed in a

fracture-box upon a well-stuffed pillow, previously covered by a thin oil cloth, in such a manner as to bring the sole of the foot in contact with the foot-board. The fractured bones are then accurately adjusted, and the sides of the box are tied together moderately tight. The foot is securely fastened to the foot-board by means of a strip of bandage, in order to prevent its falling to either side, and the pressure of the pillow is, in the vast majority of cases, quite sufficient to retain the fragments in their natural position. The foot-board of the box is set into its bottom nearly straight, and is made to project beyond the foot, in order to prevent the toes from falling downwards, and thus cause a projection forwards of the upper end of the lower fragment.

Severe inflammation so frequently follows these fractures, in consequence of most of them being accompanied with much contusion, that measures are invariably taken *ab initio* to lessen its severity. These consist in the application of cooling lotions to the limb and attention to position, elevating the fracture-box or foot of the bedstead. It is to prevent the pillow from becoming wet and unpleasant when the evaporating lotions are applied, that the oil cloth is placed above it. In order to obviate deformity in these fractures when they occur at the lower part of the leg, it is highly important to keep the foot well forwards, and this is best done by placing under the heel some layers of carded cotton.

At the end of five or six weeks, the union is generally sufficiently firm to allow of the removal of the limb from the box, and a bandage and paste-board splints, made to fit accurately the leg by previously soaking them in warm water, are applied to its sides. On these becoming hard, the patient is permitted to move about.

In very oblique fractures of the leg, where the pressure made by the pillow is not sufficient to prevent the recurrence of deformity after its reduction, permanent extension is kept up by means of Desault's splints, as in fractures of the thigh.

In fractures of the lower end of the fibula, where the foot is much drawn outwards, the apparatus of Dupuytren, consisting of a conical pad to make pressure over the internal malleolus, and a single splint applied to the inside of the limb, from the upper extremity of the leg to some distance beyond the foot, is employed; but where, as is most generally the case, the tendency to a recurrence of the deformity is not in a great degree, the apparatus commonly made use of for other fractures of the leg, consisting of the fracture-box and pillow, so placed as to exert rather more pressure than usual upon the outer ankle, is resorted to. These fractures are sometimes accompanied by compound luxation of the lower end of the tibia. The following instance in which this occurred, where the lower extremity of the tibia was successfully removed by Dr. Harris, was witnessed by me.

Barney Short, ætat. 32, was admitted on the 21st of June, 1830, for a compound fracture at the ankle. Upon examination, the foot was found to

be thrown outwards, and the end of the tibia to protrude through the integuments, which embraced it tightly, at the same time that there was a fracture of the fibula three inches above the joint.

Pretty strong efforts were made to reduce the displaced bone, which caused the man so much pain, that Dr. H. desisted from his attempts, and determined to saw off the projecting end of the tibia.

About an inch and a half was accordingly removed, after which the bones were easily reduced and the limb placed in a fracture-box and cold applications made to it. Although severe inflammation followed the operation, yet the man did well, and was discharged on the 13th of October following, walking with the aid of a crutch but with the wound perfectly healed.

Two years after, Short visited the hospital; his leg was perfectly sound, though of course shortened. With a high-heeled shoe he walked very well and a great deal—his occupation being at the time that of a pedler.

Compound fractures of the leg are more frequent with us than compound fractures of any other part. When not so severe as to call for immediate amputation, the wound is carefully cleansed, and its sides accurately brought together with strips of adhesive plaster, and covered with lint, after which the limb is placed in a box, as in simple fractures, without bandages or short splints, and cooling applications made to it. If the wound unites by the first intention, which, however, is exceedingly rare, the treatment is continued; and in cases where this does not happen, if the suppuration which follows is moderate in quantity, the same treatment is pursued with the addition of a poultice laid over the part.

In these accidents, where the discharge of pus becomes profuse, or where hæmorrhage from the veins or small arteries, either primary or secondary, is troublesome, or is to be looked for, an excellent mode of treatment was introduced into the house many years since by Dr. J. R. Barton. It consists in fixing the limb in a good position in a fracture-box on a bed of dry bran, and surrounding and enveloping it with the same material. This application is soft and pleasant to the patient, makes moderate and very equable pressure, which is increased in proportion to the increase of the hæmorrhage by the bran becoming moistened and expanded, and is unirritating to the wound, at the same time that it may be removed with the aid of a spatula or syringe, and re-applied without causing pain or disturbing in any degree the limb. No mode of dressing that I have ever made use of can be compared to that with bran, in injuries of this kind attended with profuse suppuration, during our extreme hot weather. At this season, the fetor arising from the discharge is often so powerful as to taint a whole ward, and in such cases animalculæ are generated in the course of a few hours, if the wound be in the slightest degree exposed. Clean bran, by covering completely and closely every part of the injured surface, hinders the generation of these animals, and at the same time prevents, in a great measure,

the odour that would otherwise arise, by rapidly and effectually absorbing the discharge.

Patella.—In fractures of this bone, the treatment consists in the application of a roller from the toes upwards, passed around the knee in such a way as to bring the fragments into apposition, and applied with a very moderate degree of tightness. The limb is then extended upon a well padded splint, extending from a little above the heel to the upper part of the thigh, and the whole is afterwards placed upon an inclined plane composed usually of pillows.

Clavicle.—For a number of years past, the use of Desault's apparatus for fracture of the clavicle has been entirely abandoned. As generally put on, the apparatus does not fulfil the indications intended, and when applied tightly and properly, so as to keep the fragments in perfect apposition, it in most cases produces great difficulty of respiration, or severe pain in the arm or chest. Besides this, it soon becomes relaxed, is easily deranged, and covers entirely the seat of injury, thereby making it impossible to ascertain whether or not the reduction remains complete without the removal of a part of it. The apparatus used at the hospital consists in a pad for the axilla, a ring formed of some soft substance, as a roll of muslin or of buckskin, for the shoulder of the sound side, and a sling for the elbow made of linen, extending half way up the arm, and two-thirds of the way down the fore-arm. To the elbow piece is attached three strong tapes—one to its upper and posterior part, and one to each anterior extremity. The following is the mode of applying the apparatus; a proper pad being selected and fixed in the axilla, by means of tapes fastened to its upper ends, and passing over to the sound shoulder, the ring or collar is carried up and held on the shoulder of the sound side; the sling is then fitted to the elbow, and after the fracture is reduced by drawing the arm downwards, and pushing the elbow upwards across the chest, the tape on its posterior part is carried over the back and firmly tied to the collar on the opposite side. This done, the surgeon comes round in front of the patient, and makes fast to the collar the tapes attached to the anterior extremity of the elbow piece. These are to be drawn tight enough to throw the shoulder sufficiently outwards and upwards to remove all deformity. The hand is then supported in a sling, or by a strip of bandage fastened to the collar. The whole apparatus is to be re-examined and tightened daily. The chief indications in the treatment of fracture of the clavicle are perfectly fulfilled by the use of this apparatus; the pad in the axilla throws the shoulder outwards, at the same time that the drawing up of the elbow by the linen bag throws it upwards and backwards. Besides this it is simple, requires no bandaging, and leaves the part injured at all times open to inspection. The apparatus, too, can readily be applied in females, in whom it is all important to obviate deformity. The apparatus was contrived and introduced into the practice of the hospital in

1828, by Dr. Fox, then house surgeon, since which time it has been constantly employed.

Spine.—The treatment in these cases consists in keeping the patient in a state of perfect rest, at the same time that pressure is taken off the projecting parts as much as possible by the application of pillows and other appropriate means, the careful use of the catheter, and obviating any symptoms of inflammation that may set in by the usual treatment. No instance has occurred in the ten years past, in which the operation for raising depressed portions of the vertebræ has been practised.

Humerus.—In fractures situated at the middle of the bone, three or four pasteboard splints are commonly made use of—the outer extending from the top of the shoulder to the external condyle, the inner reaching from the axilla to just above the internal condyle, and the anterior one sufficiently long to reach to the bend of the arm. The roller is applied, as in all other cases, from the fingers up, and the fracture being reduced, and the splints fixed as mentioned, is returned and fastened over them. The arm may then be bound to the body by a broad bandage, or can be left free, supported by a sling. In patients who are very restless, the roller soon becomes loose about the fore-arm and elbow, and necessitates a frequent re-application of it. To prevent, in a measure, this almost daily renewal, the use of an angular board splint well padded, and extending from the axilla to the hand on the inside of the arm is sometimes substituted; one or more short splints being at the same time applied above the elbow. The fragments by this means are held perfectly in place, and the angular splint, by holding the fore-arm at rest, keeps the bandage well and evenly applied for a much longer period than is otherwise possible. During the cure, the angle of the splint should be occasionally changed, in order to prevent any degree of stiffness at the elbow. This mode of dressing is applicable to fractures below the insertion of the deltoid only; for fractures situated high up in the bone it would be manifestly improper.

Elbow.—One of the most common of these, after fractures of the inner condyle, is that in which two fractures and three fragments are present, the humerus being broken transversely just above the condyles, and these last separated longitudinally. All fractures about this part are very troublesome and serious accidents, and to treat them well, requires extraordinary care and attention, whatever method of treatment may be made choice of. Two rectangular splints applied to the inner and outer sides of the arm, and extending from its upper part to the ends of the fingers, are frequently employed with us. When these are used, the angles of the splints should be frequently changed to prevent deformity and stiffness of the joint—those first applied being removed after ten or twelve days, and replaced by others of an obtuse angle. Another method of treatment, which is sometimes pursued at our hospital in fractures about this joint with very satisfactory results, consists in the application of a single board splint applied to the

front of the arm. This should be of the width and shape of the limb, well padded, and extending from the upper part of the arm to the ends of the fingers. At first a right angled splint may be used, but at every dressing, (and after the first few days they should be frequent,) it is to be changed for a more obtuse angled one, until finally the arm can be brought perfectly straight. The obtuse angled splints are then recommenced with, and gradually replaced by others less obtuse, until the limb is again brought to a right angle. This plan carefully pursued, will generally prevent deformity, at the same time that it is of more easy application, and more effectually hinders the occurrence of ankylosis than the common mode of dressing.

Fore-arm.—These accidents are treated by means of a roller and two splints, applied in the usual manner. Fractures of the lower end of the radius, which, it may be remarked, are very frequently mistaken for simple sprains, are treated also with two splints; the inside one extending from the upper part of the arm beyond the ends of the fingers, while that on the outside passes below the knuckles. In these, as in all other cases in which a simple fracture communicates with, or is in the immediate neighbourhood of the wrist or elbow joints, the dressings should be removed at the end of ten or twelve days, and after the joint is gently exercised, are to be re-applied. This should be repeated, at farthest, every second day. The same rule should be observed in all cases in which the fore-arm is confined in two long splints, as otherwise great rigidity of the wrist-joint occurs, which is annoying to the patient, and requires a very long time for its disappearance.

Ribs.—Fractures of the ribs are treated by the application of a broad roller to the chest, confining the patient to bed, and the usual general treatment, such as abstraction of blood, &c., when dyspnœa, pain, or other untoward symptoms arise. A large pitch plaster is sometimes used with advantage.

Cranium.—In cases of simple fractures of the cranium with depression of bone, but unaccompanied with symptoms of compressed brain, the trephine has not been resorted to, while, in instances of compound fracture, attended with depressed fragments, even where no symptoms of compression existed, it has been the general practice to remove the portions driven in.

In the following tables, no separate head is retained for compound fractures of the leg or arm, the entries being so made in the books of the institution that it is impossible in all cases accurately to ascertain whether the patient was admitted for simple or compound fracture, and for the same reason under the heads of fracture of the arm, and fracture of the leg, are included respectively, those of the fore-arm, either of one or both bones, as well as of the humerus, and of one or both bones of the leg. It is to be regretted that no record of the period required for the union of the different fractures treated, has been kept. In all cases except a very few where our patients request a discharge, it is the custom of the house to retain them for a considerable time after union—until the stiffness and debility resulting from

their injuries and confinement, has been so far removed as to enable the patients shortly afterwards to resume their employments.

	Number.	Cured.	Relieved or by request.	Died.		Number.	Cured.	Relieved or by request.	Died.
1830.					1833.				
Fractured thigh	12	10		2	Fractured arm	20	18	1	1
Fractured leg	21	20		1	Fractured sternum	1			1
Fractured patella	3	3			Fractured scapula	1	1		
Fractured cranium	3	2		1	Fractured nose	1	1		
Fractured spine	1		1		Compound fractured thigh	1			1
Fractured ribs	4	4			Un-united fractures	2	1	1	
Fractured clavicle	10	7	3		Total,	94	73	3	18
Fractured arm	27	25	1	1					
Fractured fingers	1	1							
Total,	82	72	5	5	1834.				
1831.					Fractured thigh	10	8	1	1
Fractured thigh	18	17	1		Fractured leg	36	31	1	4
Fractured leg	25	22		3	Fractured patella	3	3		
Fractured patella	2	1	1		Fractured cranium	9	4	1	4
Fractured cranium	2	1		1	Fractured ribs	5	4		1
Fractured spine	2			2	Fractured jaw	2	2		
Fractured ribs	4	3	1		Fractured clavicle	10	8	1	1
Fractured jaw	2	2			Fractured arm	20	17	2	1
Fractured clavicle	9	9			Fractured finger	1	1		
Fractured arm	27	25	1	1	Fractured scapula	1			1
Fractured fingers	1		1		Fractured toes	1	1		
Fractured sternum	2	2			Fracture	1	1		
Fractured scapula	1	1			Compound fractured thigh	1			1
Fractured toes	1	1			Un-united fracture	3	3		
Compound fractured thigh	1			1	Total,	103	83	6	14
Un united fracture	1		1						
Total,	98	84	6	8	1835.				
1832.					Fractured thigh	16	12	1	3
Fractured thigh	8	7		1	Fractured leg	32	26		6
Fractured leg	24	18	1	5	Fractured patella	4	4		
Fractured patella	1	1			Fractured cranium	2	1		1
Fractured cranium	5	2	1	2	Fractured ribs	11	10		1
Fractured ribs	3	3			Fractured jaw	8	4	1	3
Fractured clavicle	9	9			Fractured clavicle	9	9		
Fractured arm	19	16	2	1	Fractured arm	27	22	3	2
Fractured sternum	1	1			Fractured finger	1	1		
Fractured pelvis (comp.)	1			1	Fractured scapula	1	1		
Total,	71	57	4	10	Fractured toes	1		1	
					Fractured spine	1			1
1833.					Fractured pelvis	1	1		
Fractured thigh	14	12		2	Compound fractured thigh	2			2
Fractured leg	31	26	1	4	Un-united fractures	2			2
Fractured patella	1	1			Fracture	1	1		
Fractured cranium	8	2		6	Total,	119	92	6	21
Fractured ribs	4	2		2					
Fractured jaw	2	1		1	1836.				
Fractured clavicle	8	8			Fractured thigh	9	8	1	
					Fractured leg	27	20	2	5
					Fractured cranium	1			1
					Fractured ribs	3	3		

	Number.	Cured.	Relieved or by request.	Died.		Number.	Cured.	Relieved or by request.	Died.
1836.					1838.				
Fractured jaw	3	2		1	Fractured cranium	7	1		6
Fractured clavicle	8	5	3		Fractured spine	1			1
Fractured arm	36	32	2	2	Fractured ribs	6	5	1	
Fractured scapula	1	1			Fractured jaw	1			1
Fractured spine	1		1		Fractured clavicle	6	6		
Fractured toes	2	2			Fractured arm	24	20	3	1
Fractured finger	2	2			Fractured finger	2	2		
Compound fractured thigh	2			2	Fractured scapula	4	3	1	
Compound fractured knee	1			1	Fractured toes	2	2		
Un-united fracture	1	1			Fractured os calcis	1			1
Total,	97	76	9	12	Fractured knee (comp.)	1	1		
	—	—	—	—	Un-united fracture	1	1		
					Total,	103	76	9	18
1837.					1839.				
Fractured thigh	6	3	3		Fractured thigh	12	6	1	5
Fractured leg	35	28	2	5	Fractured leg	23	24	1	3
Fractured cranium	5	1		4	Fractured cranium	4			4
Fractured ribs	2	2			Fractured ribs	4	3		1
Fractured jaw	1	1			Fractured spine	1			1
Fractured clavicle	7	7			Fractured sternum	1	1		
Fractured arm	28	23	4	1	Fractured clavicle	8	7		1
Fractured finger	1	1			Fractured arm	22	18	3	1
Fractured spine	1			1	Fractured patella	2	1	1	
Fractured scapula	1	1			Fractured toes	1			1
Fractured nose	2	2			Fractured ilium	2	2		
Fractured pelvis	2	2			Fractured elbow	2	1		1
Compound fractured thigh	3	2		1	Fractured foot	3	3		
Un-united fracture	1	1			Compound fractured thigh	5	2	1	2
Total,	95	74	9	12	Un-united fractures	2	2		
	—	—	—	—	Total,	97	70	8	19
1838.						—	—	—	—
Fractured thigh	13	9	1	3					
Fractured leg	34	26	3	5					

General Summary of the Fractures treated during 10 years.

Years.	Whole number.	Cured.	Relieved or by request.	Died.	No. amputated.
1830	82	72	4	5	1
1831	99	85	6	8	2
1832	71	57	4	10	3
1833	94	73	3	18	5
1834	103	83	6	14	1
1835	119	92	6	21	2
1836	96	76	9	12	4
1837	95	74	9	12	1
1838	103	76	9	18	4
1839	97	70	8	19	8
Total,	959	758	64	137	31

The relative frequency of fractures will be seen in the following table.

	Number.	Cured.	Relieved or by request.	Died.	Amputations.
Fractured thigh	118	92	9	17	2
Fractured leg	293	211	11	41	14
Fractured cranium	46	14	2	30	
Fractured patella	16	14	2		
Fractured spine	8		1	7	
Fractured sternum	5	4		1	
Fractured clavicle	84	75	7	2	
Fractured arm	250	216	22	12	9
Fractured fingers	9	8	1		
Fractured scapula	10	8	1	1	
Fractured elbow	2	1		1	
Fractured nose	3	3			
Fractured jaw	19	12	1	6	
Fractured pelvis	5	5			
Fractured foot	12	10	2		4
Fractured ribs	46	39	2	5	
Fracture	2	2			
Compound fractured pelvis	1			1	
Compound fractured knee	2	1		1	2
Compound fractured thigh	15	4	1	10	
	946	749	62	135	31
Un-united fractures	13	9	2	2	
Total,	959	758	64	137	31

Of the thirty-one amputations performed in cases of fracture, twenty-two were cured and nine died. The details of these have already been given in our statistical account of the amputations made at the hospital, during the years comprised in this report, in the numbers of this Journal for August, 1838, and May, 1840.

No instance of artificial joint followed the treatment for fracture during the ten years included in the report. All the cases observed there during that period having been sent to the institution from distant parts. Of the thirteen cases that were received, nine were cured, two died, one was benefited, and one left the house a day or two after entrance without undergoing any treatment for it. Of the fractures included in the above tables, many were compound, and many complicated by other serious injuries.

Compound Fracture of the Thigh.—Fifteen of these accidents entered the house between the years 1830 and 1840. Of these four were in children below thirteen years of age. In one of these (ætat. 6) the wound healed kindly, and no bad symptoms followed; in another case (ætat. 7) the patient was carried home by his parents, and recovered; in a third (ætat. 11) the patient died; and the last (ætat. 12) recovered with a good limb. Of the eleven cases above thirteen years of age, seven died within two weeks after the receipt of their injuries, an eighth (ætat. 18) lived three months, and died of metastatic abscess; a ninth (ætat. 56) died at the end of eleven months of chronic diarrhœa, bony union at the time being perfectly firm, though the wound had not closed; and the other two cases (ætat. 21 and

15) recovered with good limbs, though in the first case not till after a residence in the hospital of twenty-three months, and the removal of a necrosed portion of bone six inches in length.*

DISLOCATIONS.—With the exception of a few of the luxations of the shoulder and hip, the cases included in the following table were of recent occurrence, and in all of these cases the bones were reduced without accident of any sort. Two out of the three luxated shoulders marked as discharged by request, were incurable. One of them existed in the person of a young sailor, aged 20, who was admitted Dec. 4th, 1830, with a forward dislocation of the head of the humerus of sixty-two days standing. Some days after his entrance, an attempt was made by Dr. Hewson to reduce it by means of the pullies. Great force was used, and the efforts were kept up for a long time, but without success. After the lapse of a short time, by request of the patient, strong efforts were again made to reduce it, and kept up for a considerable time, but with no better effect than on the first attempt.

The other case was a forward luxation of three months' standing, which it was found impossible to reduce by any proper degree of force, and has already been given at length in a former report.†

Among the cases of dislocation at the shoulder cured, are those which had been out twenty-six, forty-five, fifty-three, thirty-one, ten, twenty-one, and thirty-one days, respectively.

The only instance of luxated hip of long standing, in which attempts at reduction were deemed proper, was that of a lad, *ætat.* 12. The signs of dislocation, upwards and backwards on the ileum, of the right femur, were well marked, with shortening of the limb to the extent of two inches. The accident had happened fourteen weeks previously, and its nature had been mistaken by the person called to visit him. The injury had been produced by a fall from a height, and the head of the bone was to a certain extent moveable by rotating the limb. After the application of the pullies he was bled largely from the arm, and took a solution of tartar emetic, by which means his system became completely relaxed. Pretty strong extension was then made from above the knee, and after this had been kept up near half an hour, the head of the bone was drawn outwards by means of a towel, and the knee rotated. During these efforts a sudden crack was distinctly heard. The apparatus was immediately removed. The boy was now exceedingly prostrate. Much more motion than before the trials existed at the hip; the toes could be turned much further outwards, and the knees could be to a certain extent separated. The boy did not complain of pain on rotation, and took a few steps upon the limb some time after being released. It was at first feared that a fracture at the neck of the bone had been pro-

* This patient, I have been informed, entered the Baltimore Infirmary a few months after his discharge from our institution, where he died in consequence of some disease of the injured limb.

† American Journal for February, 1840.

duced, but repeated close subsequent examinations proved this not to be the case. He left the institution twenty-two days after the trial, with more motion in the limb than he had previously had.

Table of the Dislocations treated during 10 years.

	Number.	Cured.	Relieved or by request.	Died.		Number.	Cured.	Relieved or by request.	Died.
1830					1836				
Dislocated shoulder	3	2	1		Dislocated shoulder	6	5	1	
1831					Dislocated hip	3	1	1	1
Dislocated shoulder	3	2		1	Dislocated elbow	2	2		
Dislocated hip	4	4			Dislocated clavicle	1	1		
Dislocated astragalus	1			1	Dislocation and laceration	1			1
Dislocated cervical ver- tebræ	1			1	1837				
Dislocation and fracture	1	1			Dislocated shoulder	6	6		
1832					Dislocated hip	1		1	
Dislocated shoulder	3	3			Dislocated clavicle	1	1		
Dislocated hip	2	2			Compound dislocated				
Dislocated jaw	1	1			thumb	1	1		
Compound dislocated					1838				
thumb	1		1		Dislocated shoulder	7	7		
1833					Dislocated hip	2	2		
Dislocated shoulder	4	4			Dislocated radius	1	1		
Dislocated hip	1		1		1839				
Dislocated wrist	1	1			Dislocated shoulder	4	3	1	
1834					Dislocated hip	1	1		
Dislocated shoulder	6	6			Dislocated jaw	1	1		
Dislocated hip	1	1			Dislocated clavicle	1	1		
Dislocated ankle	1			1	Dislocated elbow	2	2		
Dislocated wrist	2	2			Dislocated wrist	1	1		
Dislocation	1		1		Dislocated finger	1	1		
1835					Dislocated great toe	1	1		
Dislocated shoulder	7	7			Total,	94	80	8	6
Dislocated hip	2	2							
Dislocated ankle	1	1							
Dislocated elbow	3	3							

General Summary of the Dislocations treated during 10 years.

	Number.	Cured.	Relieved or by request.	Died.		Number.	Cured.	Relieved or by request.	Died.
Dislocated shoulder	49	45	3	1	Dislocated radius	1	1		
Dislocated hip	17	13	3	1	Dislocated finger	1	1		
Dislocated astragalus	1			1	Dislocated great toe	1	1		
Dislocated cervical ver- tebræ	1			1	Compound dislocated				
Dislocated jaw	2	2			thumb	2	1	1	
Dislocated ankle	2	1		1	Dislocation and laceration	1			1
Dislocated elbow	7	7			Dislocation and fracture	1	1		
Dislocated wrist	4	4			Dislocation	1		1	
Dislocated clavicle	3	3			Total,	94	80	8	6

Some of the dislocations included in the above table were accompanied by other severe injuries, and in all the instances in which death followed, it was from some other cause than the luxation, except those of the astragalus and vertebræ. Simple dislocation of these bones are very rare forms of accident; a detailed account of the first of them I have already published in vol. XX of this Journal. The luxation of the spine occurred at the fifth cervical vertebræ, and was unattended by any fracture. The following are its details:—Thomas Lee, ætat. 30, was admitted early on the morning of September 9th, 1831. At 11 o'clock on the previous night, while in a state of intoxication, he had been thrown headlong against the curbstone from a gig that he was driving at a furious rate. There was complete paralysis of the lower extremities, chest, and lower half of the trunk. He complained of great pain over the lower cervical vertebræ; but so much swelling and ecchymosis existed at this part, that the state of the spinal column could not be satisfactorily ascertained. When placed in an erect position he cried out from pain, unless his forehead was firmly supported; and, when laid on his back, his head was seen to be thrown a little forwards, and pushed down upon his chest. The hands and arms retained their sensibility, but he was unable to double his fist, or seize any thing firmly. His respiration was hurried, difficult, and performed entirely by the diaphragm; he complained incessantly of being unable "to breathe properly." Priapism existed, and continued constant till the period of his death. From the existence of the above symptoms, the case was looked upon as one of fracture, with consequent luxation of the lower cervical vertebræ. He was placed on his back, with the head and shoulders slightly elevated, had his bladder, which was distended, emptied by the catheter; and, as his pulse was full, he was bled moderately. By 10 A. M. his sufferings had become so great, that Dr. Barton, the surgeon in attendance, deemed it proper to make some attempt to relieve them, by cautiously making extension and counter-extension. The extension was made by means of a handkerchief passed under the chin, the ends of which were tied firmly to the head of the bedstead, and the counter-extension was kept up by securing the ankles with a broad bandage, and fastening it to the foot-board. The patient expressed himself as being decidedly easier after the extension was made. On visiting him on the morning of the 11th, I found him without pain, and with no apparent change in his symptoms. His position was in no way changed; and, while in the room engaged with another patient a few feet distant, my attention was directed by the nurse to Lee, and on approaching him I found him dead.

Autopsy.—A considerable effusion of blood was found in the cellular tissue beneath the skin, as well as between the muscles on the back part of the neck. The yellow ligaments and the ligamentous fibres, holding together the oblique processes, were ruptured, and the fifth cervical vertebra was thrown forwards upon the sixth. Examined in front, the vertebral ligaments were found also to be ruptured, and the inter-vertebral substance

torn up, so that the body of the fifth was completely separated from, and projected over, the sixth. Accurate examination, after the removal of the upper part of the spinal column, proved that no fracture existed, and that the injury consisted in a simple displacement of both body and processes of the vertebræ. The examination was made twenty-eight hours after death, but, owing to the heat of the weather, putrefaction had considerably advanced, and the spinal cord, the coverings of which were uninjured, was so much softened in its whole extent, that its state at the point of injury could not be determined.

ARTICLE III. *Report on the Medical Topography of Madison Barracks, Sacket's Harbour, N. Y., and the Diseases which occurred there between the 1st of August, 1838, and the 30th of September, 1840.* By THOS. HENDERSON, M. D., U. S. A.

THE post at Sacket's Harbour was occupied by portions of the 8th regiment United States infantry, sometime in May, 1838. The numerical force at Madison Barracks fluctuated in the winters of 1838-9, and 1839-40, as detachments were sent to outposts. I was with three detachments at Oswego, Ogdensburg, and Morristown, and from what occurred there the representations in the tables are accurately estimated from an average force of 450 men. In May and June, 1840, the command was reduced to two skeleton companies, that were rapidly filled up to one hundred and fifty men; while the slender force in June accounts for no reports of sick during that month.

The station at Sacket's Harbor is in latitude N. 43° 50', and in longitude E. 1° from Washington. It is distant from the ocean about 320 miles—from Lake Ontario 8 miles, and is situated on the southern side of the bay formed by the entrance of Black River into the lake. The colour of the water of this river, which is the third in size in the state of New York, is dark, from whence the stream takes its name; and the water is not drunk by those who live on the river, under an impression that it is not wholesome—it is certainly unpleasant to the taste, being greatly inferior to the water taken from the lake. The surface of the lake is 230 feet higher than that of the ocean, and the plain of the parade ground is 40 feet elevated above the surface of Lake Ontario.

The grounds around the garrison are level; the soil is dark with much clay, and rests on a stratum of limestone, which is in depth from the surface from one to three or four feet. In wet seasons the grounds around the post are wet and boggy, and even after ordinary rains the nature of the soil